

SRDS Report No. RD-69-22, VOL. (4)

FINAL REPORT

Contract No. FA-67-WAI-129

Project No. 197-641-01R

CLIMATOLOGICAL SUMMARIES

AD 689741

VISIBILITIES BELOW 1/2 MILE
AND CEILINGS BELOW 200 FEET

VOLUME 4

INTERNATIONAL AIRPORT
BIRMINGHAM, ALABAMA

JUNE 1969

D D C
1969
1969

This report has been approved for unlimited availability.

Prepared for

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Systems Research & Development Service

by

U.S. DEPARTMENT OF COMMERCE
Environmental Science Services Administration
ENVIRONMENTAL DATA SERVICE
NATIONAL WEATHER RECORDS CENTER

Asheville, N.C.

REPRODUCED BY
CLEARINGHOUSE
FOR THE SCIENCE AND TECHNOLOGY
INFORMATION SYSTEMS

FINAL REPORT

Contract No. FA-67-WAI-129

Project No. 197-641-01R

SRDS Report No. RD-69-22

CLIMATOLOGICAL SUMMARIES

**VISIBILITIES BELOW 1/2 MILE
AND CEILINGS BELOW 200 FEET**

JUNE 1969

This report has been prepared by U.S. DEPARTMENT OF COMMERCE, Environmental Science Services Administration, Environmental Data Service, National Weather Records Center, Asheville, N.C. for the Systems Research and Development Service, Federal Aviation Administration, under Contract No. FA-67-WAI-129. The contents of this report reflect the views of the contractor, who is responsible for the facts and the accuracy of the data presented herein, and do not necessarily reflect the official views or policy of the FAA. This report does not constitute a standard, specification or regulation.

CONTENTS

LIST OF TABLES	1
INTRODUCTION	3
ENVIRONMENT AND INSTRUMENTATION OF STATION	4
NATURE OF DATA	5
EXPLANATION OF TABLES	6
REPORTED VISIBILITY AND CEILING VALUES VERSUS INTERVALS OF DURATION	7
WEATHER CATEGORIES OF AIRCRAFT LANDING SYSTEMS VERSUS INTERVALS OF DURATION BASED ON TABLE D	8
PERCENTAGE FREQUENCY OF WIND DIRECTION VERSUS SPEED GROUPS	8
WEATHER CATEGORIES OF LANDING SYSTEMS VERSUS INTERVALS OF DURATION BASED ON TABLE E	9
EXPLANATION OF TABLE E	10
ACKNOWLEDGEMENTS	10
TABLES	11-29

LIST OF TABLES

TABLE		PAGE
A	LIST OF STATIONS FOR WHICH SUMMARIES HAVE BEEN PREPARED	11
B	WEATHER LIMITS OF AIRCRAFT LANDING OPERATIONS	12
C	RELATIONSHIP OF CATEGORIES OF AIRCRAFT LANDING OPERATIONS AND METEOROLOGICAL CEILING AND VISIBILITIES - CURRENT PRACTICE	13
D	RVR - METEOROLOGICAL VISIBILITY RELATIONSHIP, CURRFNT PRACTICE	14
E	RELATIONSHIP OF CATEGORIES OF AIRCRAFT LANDING OPERATIONS AND METEOROLOGICAL CEILING AND VISIBILITIES - CIRCULAR N	15
F	RVR - METEOROLOGICAL VISIBILITY, CIRCULAR N	16
TABLE		
I-IX	VISIBILITIES AND CEILINGS VERSUS INTERVALS OF DURATION	17
I	Visibility equal to or greater than 1/2 mile when ceiling is less than 200 ft.	
II	Visibility, irrespective of ceiling.	
III	Visibility, ceiling 100 ft.	
IV	Visibility, ceiling zero.	
V	Visibility, ceiling 100 ft. or zero.	
VI	Total time at or below each visibility classed as one incident, irrespective of ceiling.	
VII	Total time at or below each visibility classed as one incident, ceiling 100 ft.	
VIII	Total time at or below each visibility classed as one incident, ceiling zero.	
IX	Total time at or below each visibility classed as one incident, ceiling 100 ft. or zero.	
X	CATEGORIES OF AIRCRAFT LANDING OPERATIONS VERSUS INTERVALS OF DURATION (based on Table C) - YEARLY SUMMARY	18
XI	WIND DIRECTION VERSUS SPEED BY PERCENTAGE FREQUENCY (13 stations, listed on page 6)	19

TABLES

XII - XXI CATEGORIES OF AIRCRAFT LANDING OPERATIONS VERSUS
INTERVALS OF DURATION (Based on Table E)

PAGE

Each with four sections:

1. 0700-1359 Local Standard Time
2. 1400-2159 Local Standard Time
3. 2200-0659 Local Standard Time
4. All Hours

XII	All conditions.	20
XIII	Temperature less than 33° F.	21
XIV	Temperature less than 33° F, with fog, no precipitation and winds of less than 9 knots.	22
XV	Temperature less than 33° F, with fog, no precipitation, and wind 9-12 knots.	23
XVI	Temperature less than 29° F.	24
XVII	Temperature less than 29° F, with fog, no precipitation and wind less than 9 knots.	25
XVIII	Temperature less than 29° F, with fog, no precipitation and wind 9-12 knots.	26
XIX	Temperature greater than 32° F.	27
XX	Temperature less than 32° F, with fog, no precipitation and wind less than 9 knots.	28
XXI	Temperature 32° with fog, no precipitation and wind 9-12 knots.	29

INTRODUCTION

The tables contained herein have been prepared and organized for use in evaluating the cost/benefits of all weather landing systems and fog dissipation techniques. Thus, the time intervals of duration of the categories of weather are significant in determining the times of the delay, diversion or cancellation of an aircraft flight resulting from a restricted weather category. This information together with the number and types of aircraft affected by the restricted weather and the costs of a delay, diversion or cancellation combine to provide the total costs resulting from the weather restrictions.

Climatological summaries have been prepared for 41 airports. Their location and associated volume numbers are listed in Table A.

ENVIRONMENT AND INSTRUMENTATION

BIRMINGHAM, ALABAMA INTERNATIONAL AIRPORT

The Birmingham International Airport is located at the southwestern tip of the Appalachian range at an elevation of about 610 feet above MSL. The terrain is characterized by a series of ridges and valleys oriented generally in a northeast-southwest direction, with the major ridges lying to the east and southeast of the airport.

The airport lies in a valley with ridges about 2 to 3 miles to the northwest and southeast rising 300 to 600 feet above the field. The valley in which the airport is located slopes gradually downward to the southwest into lower rolling country, but in all other directions the terrain is very irregular.

The tables in this publication are based on the 10-year period, January 1, 1956-December 31, 1965. Ceiling heights were measured by ceilometer throughout the period. Transmissometer (500 ft. baseline) was commissioned on runway 05 July 11, 1960. Location of the airport weather station, its elevation, and the height of wind instrumentation during the period were as follows:

<u>From</u>	<u>To</u>	<u>Lat. N.</u>	<u>Long. W.</u>	<u>Height of Wind Instrument Feet above ground</u>	<u>Station Elevation Feet above MSL</u>
1- 1-56	6- 2-63	33° 34'	86° 45'	63	610
6- 2-63	8-25-65	33° 34'	86° 45'	22	610
8-26-65	12-31-65	33° 34'	86° 45'	22	620

NATURE OF DATA

The data used in the preparation of the climatological tables were extracted from 10 years of WBAN 10-A forms from January 1956 through December 1965. There were two exceptions: The data for Dulles International covered the period January 1963 through December 1965 and for Kansas City-Mid-Continent the period July 1957 through December 1965. All data (Record, Special, Local, Check observations)* were recorded on punched cards to the hour and minute whenever a change occurred in the ceiling, surface visibility, present weather, runway visual range or runway visibility during the time the ceiling was less than 200 feet and/or the surface visibility was less than 1/2 mile. The observation which ended a category of the above conditions was punched and if this observation was not a Record observation, the next Record observation was punched. The elements transcribed were: the time in hours and minutes, ceiling, surface visibility, tower visibility, present weather, temperature, dew-point, surface wind, altimeter setting and remarks concerning runway visual range and runway visibility.

These data should prove to be a valuable source for additional studies where low visibilities are considered.

Runway visual range (RVR) is the operational weather criteria for airport landing systems. The limits of visibility conditions for categories of aircraft operations are presented in Table B. Only Cat. II criteria are currently operational. Because RVR as such, is not available on a uniform basis for the station and period of record under study, visibilities and ceilings were used for delineating categories of weather minimums for landing and take-off operations. The determination of RVR would require:

1. The light setting of the edge lights,
2. the background lighting,
3. the location with respect to runway,
4. a special analyzer to integrate the transmissiometer readings etc.

This information has not often been recorded with the transmissiometer data.

* Except Kansas City - Mid-Continent. Only Record (hourly) observations were taken during the period of record at this station; 16 hours per day (0700-2200) through November 1957 and 24 hours per day December 1957 through December 1965.

EXPLANATION OF TABLES

All the tables of climatological summaries except Table I are based on the reported visibilities of less than 1/2 mile and/or ceilings less than 200 feet.

The tables of climatological summaries in these publications include:

- (1) reported visibility and ceiling values versus time intervals of duration.
- (2) weather categories of aircraft landing systems based on their relationship to ceiling and visibility as presented in Table C, versus intervals of duration. This is Table X only.
- (3) percentage frequency of wind direction versus wind speed for each category of aircraft landing system using the relationship of Table C for Record observations only. These are presented for 13 stations only. This is Table XI only.*
- (4) weather categories of landing systems based on their relationship to ceilings and visibility as presented in Table E, versus intervals of duration. These tables are also summarized on the basis of wind speed and temperature values.

* These stations are:

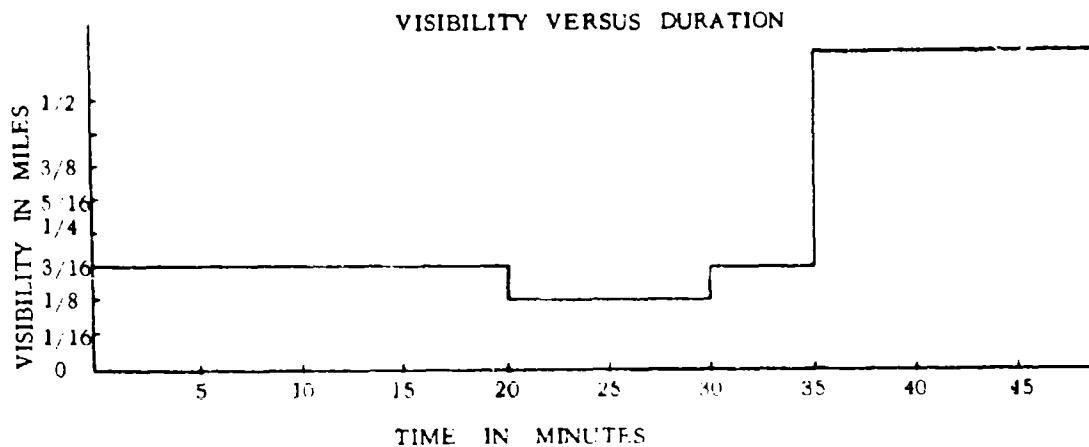
Los Angeles International, Oakland International, Chicago O'Hare, San Francisco International, Greater Buffalo International, Washington National, Washington Dulles International, Atlanta, Newark, New York J. F. K., Philadelphia International, New York La Guardia, Cleveland Hopkins International

REPORTED VISIBILITY AND CEILING VALUES VERSUS INTERVALS OF DURATION

Nine summaries are presented. In Tables I - V the values represent the individual incidents of specified ceiling and visibility. Thus, in Table III 3/8 mile visibility with 100 ft. ceiling occurs with a specific frequency for each interval of duration.

In Tables VI to IX, the frequency of occurrence represents visibilities for specific conditions of ceilings at or below the listed visibility. They are cumulative incidents wherein the total time at or below a certain visibility value for the ceiling value specified is considered as one incident. Thus, if in Table VII there are 172 incidents of 3/8 mile in the interval of 1-15 minutes, it represents 172 times during the 10-year period that visibilities 3/8 mile or less with ceilings 100 feet.

Another example which combines the entries in the individual and the cumulative tables is as follows: If visibility is distributed as shown in the figure, for ceiling 100 feet, if for 20 minutes the visibility was 3/16 then went to 1/8 for 10 minutes, then went to 3/16 for 5 minutes and then to greater than 1/2 mile visibility in Table III there would be 2 counts for 3/16, one under 16-30 minutes and one under 1-15 minutes; and one count for 1/8 under 1-15 minutes; whereas, in the cumulative table for visibilities at or below a given visibility with 100-foot ceilings - Table VII in the 3/8, 5/16, 1/4 and 3/16 mile categories there would be one count under 31-45 minutes (actually 35 minutes) and one count in 1/8 mile category under 1-15 minutes (actually 10 minutes).



To estimate the total time of occurrence for a particular interval of time for the period of record one multiplies the average of time period by the frequency of occurrence of the specified conditions for this time period. Thus, if visibility of 3/8 mile with ceiling 100 feet (Table III) occurred 14 times between 16-30 minutes, the estimated total time would be 14×23 or 322 minutes.

WEATHER CATEGORIES OF AIRCRAFT LANDING SYSTEMS VERSUS INTERVALS OF DURATION BASED ON TABLE D

A single table (Table X) based on Table C for the period of record is presented. Table C is based on the current practices relating RVR to meteorological visibilities as shown in Table D.

Table X is in three sections:

Xa. Frequency of occurrence of the landing categories versus the indicated duration intervals:

In this summary Categories II, IIIa, IIIb, and IIIc are represented by the frequency of these conditions occurring during the specified intervals.

In Category II + III the frequency represents the visibilities and ceilings at or below Category II weather, i. e., below 200 feet and/or 1/2 mile for a continuous period of time.

In Category III, the number of occurrences represent the frequency the weather was in Category IIIa and IIIb/c i.e., observation below 1/4 mile and equal to and above 1/4 mile when the ceiling is reported as zero for a continuous period of time.

Xb. Total time in each duration versus the duration intervals in hours and tenths of hours. The entries in this table are arrived by adding the times in minutes associated with the frequencies above. These totals are converted to hours and tenths. This table also contains the percentage of time for the 10-year period of observations of specified duration intervals, i. e., 1-90, 91-all, 1-all. This table is derived by dividing the total time under each category for the specified duration interval by the total number of hours. Thus the percentage value for Category II + III the 1-all group (last column, 4th value down) represents the frequency of occurrence for the ten-year period in percent of visibility and ceilings below 1/2 mile and/or 200 feet.

Xc. Average time in each duration versus the duration intervals.

This table is derived by dividing the total time in minutes of each item in Table Xb by the frequency of occurrence in Table Xa.

WIND DIRECTION VERSUS SPEED BY PERCENTAGE FREQUENCY (Table XI)

Table XI (for 13 stations) (unnumbered on summaries) show the percentage distribution of the different categories in accordance with Table D by wind direction to 16 points versus specified speed intervals. These categories, II, IIIa and IIIb/c, are divided into 2100-0500 and 0600-2000 hour groups making a total of six sub-tables.

Only the hourly (Record) observations when Category II or below conditions exist are used in these summaries. The percentages are determined by dividing the number of hourly observations which were recorded during the entire period of record for the indicated hour group. The percentage figures can be combined to obtain percentages for the quadrants of different speed intervals.

WEATHER CATEGORIES OF LANDING SYSTEMS VERSUS INTERVALS OF DURATION BASED ON TABLE E

Nine tables XII - XXI are presented for the ten-year period. These tables are presented in three sections:

a. Frequency of occurrences of landing categories versus duration intervals:

Categories II, IIIa, IIIb, and IIIc are represented by the total time for the specified hour group that these conditions occur during the indicated intervals.

In Categories II + III the frequency represents the visibilities and ceilings at or below Category II weather e. g., below 2400 RVR. In Category III the frequency represents the visibilities at or below Category III weather e. g., below 1200 RVR.

b. Total time in each duration versus the duration intervals hours and tenths,

The entries in this table are derived by adding the time in minutes associated with the frequency above and converting them to hours and tenths.

c. Average time in each duration versus the duration intervals.

This table is derived by dividing the total time in minutes of each value in b by the corresponding frequency of occurrence in a.

In these tables, since the period of duration is the important element, each incident of weather is attributed to the hour group during which it began. Thus, if Category IIIa weather began in the 22-06 hour group and continued into the 07-13 hour group the total time is placed in the 22-06 group. It is probable, then, that the incidence of the various categories may be overestimated in the 22-06 group. The totals appearing in the all hour group, however, are correct.

The sum of Categories IIIa, IIIb, and IIIc in the all-hour groups and sometimes in the other hour groups are frequently greater than under Cat. III. This results from the addition of 5% of observations of 3/16 mile or greater with ceiling 100 feet added to Cat. IIIa, whereas, this 5% is not included in the Cat. III totals at the bottom of each table.

The difference between Cat. III totals and the sum of Cat. IIIa, IIIb, and IIIc are subtracted from the Cat. II totals for the all-hour group and appears at the end of the Cat. II line with an asterisk. This value is a better estimate of the occurrence of Cat. II weather for the 10-year period.

EXPLANATION OF TABLE E

The relationship of RVR with light setting 5 for a 500' baseline to the meteorological report of visibility, based on the information in Circular N^{1/}, is given in Table F. This was the basis for establishing the relationships in Table E. The use of the highest setting for the edge lights for approaches in low visibility is the current operational practice. Although the selection of some of the relationships in Table E have been somewhat arbitrary, it can be expected that the observers report of low visibilities and ceilings will be more inexact than the cut off point of these relationships.

^{1/} Manual of Surface Observations (WBAN). Circular N, Weather Bureau, Washington, D. C. NAVAIR 501D503, July 1968 (AD672-366)

ACKNOWLEDGEMENTS

This publication, one of a series, was prepared for the Federal Aviation Administration by the Environmental Science Services Administration's Environmental Data Service, Dr. W. C. Jacobs, Director. Technical supervision for the Environmental Data Service was by Mr. Julius F. Bosen and for the Federal Aviation Administration by Mr. Arthur Hilsenrod. The text was prepared and the tables compiled and prepared for printing at the National Weather Records Center, Asheville, North Carolina, Mr. William H. Haggard, Director. Principal participants in the project at NWRC included Messrs. Joseph M. Meserve, Oliver M. Davis, Ronald G. Baldwin, M. Larry Snelson, James D. Matthews, David H. Stancil, and Lloyd F. Stevens.

This is one of 41 volumes of Report RD-69-22. The volumes are as follows:

<u>VOL.</u>	<u>CITY</u>	<u>AIRPORT</u>
1.	Anchorage, Alaska	International
2.	Atlanta, Georgia	Atlanta
3.	Baltimore, Maryland	Friendship International
4.	Birmingham, Alabama	International
5.	Boston, Massachusetts	General E. L. Logan International
6.	Buffalo, New York	Greater Buffalo International
7.	Burbank, California	Hollywood-Burbank
8.	Chicago, Illinois	O'Hare International
9.	Cincinnati, Ohio	Greater Cincinnati
10.	Cleveland, Ohio	Cleveland-Hopkins International
11.	Columbus, Ohio	Port Columbus International
12.	Dallas, Texas	Love Field
13.	Dayton, Ohio	James M. Cox Municipal
14.	Denver, Colorado	Stapleton International
15.	Detroit, Michigan	Detroit Metropolitan-Wayne County
16.	Hartford, Connecticut	Bradley International (Windsor Locks)
17.	Houston, Texas	William P. Hobby
18.	Indianapolis, Indiana	Weir Cook
19.	Kansas City, Missouri	Mid-Continent International
20.	Los Angeles, California	International
21.	Louisville, Kentucky	Standiford Field
22.	Miami, Florida	International
23.	Milwaukee, Wisconsin	General Mitchell Field
24.	Minneapolis, Minnesota	Minneapolis-St. Paul International
25.	Nashville, Tennessee	Metropolitan
26.	Newark, New Jersey	Newark
27.	New Orleans, Louisiana	International
28.	New York, New York	John F. Kennedy International
29.	New York, New York	La Guardia
30.	Oakland, California	Metropolitan Oakland International
31.	Philadelphia, Pennsylvania	International
32.	Pittsburgh, Pennsylvania	Greater Pittsburgh International
33.	Portland, Oregon	International
34.	Rochester, New York	Rochester-Monroe County
35.	St. Louis, Missouri	Lambert-St. Louis Municipal
36.	Salt Lake City, Utah	Municipal No. 1
37.	San Francisco, California	International
38.	Seattle, Washington	Seattle-Tacoma International
39.	Syracuse, New York	Clarence E. Hancock
40.	Washington, D. C.	Dulles International
41.	Washington, D. C.	National

TABLE A

LIMITS OF LANDING CATEGORIES

- * CAT. II Operations down to minima below 200 feet decision height and 2400 RVR and to as low as 100 feet decision height and 1200 RVR.
- ** CAT. IIIA Below 100 feet decision height and 1200 RVR and to as low as 50 feet decision height and 700 RVR.
- ** CAT. IIIB Below 700 RVR to 150 RVR.
- ** CAT. IIIC No external visual reference.

TABLE B

- * Current operational criteria
- ** Criteria not firm, used for planning purposes

CEILING AND VISIBILITY EQUIVALENTS FOR CATEGORIES
OF AIRCRAFT LANDING OPERATIONS CURRENT PRACTICE
CRITERIA for Table X and XI

Category II:	Visibility = 1/2 and ceiling = 100
	Visibility = 3/8 and ceiling ≠ 0
	Visibility = 5/16 and ceiling ≠ 0
	Visibility = 1/4 and ceiling ≠ 0
Category III-a:	Visibility = 1/4 and ceiling = 0
	Visibility = 3/16 and all ceilings
	Visibility = 1/8 and all ceilings
Category III-b/c:	Visibility = 1/16 and all ceilings
	Visibility = 0 and all ceilings
Category III:	The sum of IIIa, IIIb, and IIIc

TABLE C

RVR VERSUS VISIBILITY (Current Practice)

METEOROLOGICAL VISIBILITY	RVR EQUIVALENT
Statute Miles (feet)	Feet
3/16 (990 feet)	1200
• 1/4 (1320 feet)	1600
• 1/2 (2640 feet)	2400

TABLE D

- United States Standard for Terminal Instrument
Procedures (TERPs), Federal Aviation Agency, September 1966.

CEILING AND VISIBILITY EQUIVALENTS FOR
CATEGORIES OF AIRCRAFT LANDING OPERATIONS
Criteria for Tables XII-XXI

Category II
Below 2400 ft. RVR to
1200 ft. RVR

Equivalent Meteorological Observations

All observations with visibilities greater than
3/8 mile with ceiling 100 feet.

All observations of 3/8 mile with ceiling not
equal to zero.

All observations of 5/16 mile with ceiling not
equal to zero.

All observations of 1/4 mile with ceiling not
equal to zero.

All observations of 3/16 mile with ceiling not
equal to zero.

Category III
Category IIIa
Below 1200 ft. RVR to
700 ft. RVR

All observations of 1/8 mile.

All observations of 3/16 mile or greater with
zero ceiling.

5% of observations of 3/16 mile or greater with
ceiling 100.

Category IIIb
Below 700 ft. RVR to
150 ft. RVR

All observations of 1/16 mile.

50% of all observations of zero miles.

Category IIIc
Below 150 ft. RVR

50% of observations of zero miles.

TABLE E

RVR VEP'S METEOROLOGICAL VISIBILITY

Circular N

Reported Meteorological Visibilities Miles (feet)	RVR (500 ft. baseline) at Setting 5		Category
	Day	Night	
0 (less than 330 feet)	*	*	(IIIc and IIIb)
1/16 (330 feet-650 feet)	*	*	(IIIb)
1/8 (660 feet-980 feet)	1000-1400	*	(IIIb and IIIa)
3/16 (990 feet-1310 feet)	1400-1800	1200-1800	(Cat. II)
1/4 (1320 feet-1640 feet)	1800-2200	1800-2200	(Cat. II)

* No determination of RVR with respect to meteorological visibility.

TABLE F

TABLE IV-A. (CONTINUED)

FREQUENCY OF INTERVALS OF DURATION AT OR BELOW EACH OF VARIOUS LEVELS OF VISIBILITY

JANUARY 1950 - DECEMBER 1955

TABLE IV. (RESPECTIVE OF CEILING)

VISIBILITY	DURATION IN MINUTES											
	1-15	16-30	31-45	46-60	61-75	76-90	91-120	121-180	181-240	241-360	361-480	481+
3/8	9	2	1	2	1							
9/16												
1/4	62	26	6	14	10	6	2	1	1			
3/16												
1/8	13	11	12	1	2	1	1	2	1			
5/16	0	0	0	1	1	6	3	1	2	2	1	
0	4	6	1	1	1	6	3	1	2	2	1	

TABLE IV-B. (RESPECTIVE OF CEILING)

VISIBILITY	DURATION IN MINUTES											
	1-15	16-30	31-45	46-60	61-75	76-90	91-120	121-180	181-240	241-360	361-480	481+
3/8	9	2	1	2	1							
9/16												
1/4	62	26	6	14	10	6	2	1	1			
3/16												
1/8	13	11	12	1	2	1	1	2	1			
5/16	0	0	0	1	1	6	3	1	2	2	1	
0	4	6	1	1	1	6	3	1	2	2	1	

TABLE IV-C. (CEILING 100 FEET)

VISIBILITY	DURATION IN MINUTES											
	1-15	16-30	31-45	46-60	61-75	76-90	91-120	121-180	181-240	241-360	361-480	481+
3/8	2	1	1	1	1							
9/16												
1/4	20	8	1	1	7	1	1					
3/16												
1/8	9	4	1	1	1	2	1	1	1			
5/16	7	1	1	1	1	1	1	2	1	1		
0	4	2	3	2	3	6	3	1	1	1	1	

TABLE IV-D. (CEILING ZERO)

VISIBILITY	DURATION IN MINUTES											
	1-15	16-30	31-45	46-60	61-75	76-90	91-120	121-180	181-240	241-360	361-480	481+
3/8	1											
9/16												
1/4	25	12	7	7	9	3	3	3	1			
3/16												
1/8	12	8	7	2	2	2	1	1	1	1		
5/16	7	1	1	1	1	1	1	2	1	1		
0	5	2	2	3	3	3	4	3	1	1	1	

TOTAL TIME AT OR BELOW EACH VISIBILITY CLASSED AS ONE INCIDENT

TABLE V. (RESPECTIVE OF CEILING)

VISIBILITY	DURATION IN MINUTES										
	1-15	16-30	31-45	46-60	61-75	76-90	91-120	121-180	181-240	241-360	361-480
3/8	46	19	6	13	17	19	10	4	10	2	1
9/16	41	16	6	16	16	19	10	4	10	2	1
1/4	41	16	6	16	16	19	10	4	10	2	1
3/16	32	9	6	3	10	9	5	3	8	2	1
1/8	12	7	6	3	10	9	5	3	8	2	1
5/16	7	5	2	3	10	9	5	3	8	2	1
0	4	3	2	3	10	9	5	3	8	2	1

TOTAL TIME AT OR BELOW EACH VISIBILITY CLASSED AS ONE INCIDENT

TABLE VI. (CEILING 100 FEET)

VISIBILITY	DURATION IN MINUTES											
	1-15	16-30	31-45	46-60	61-75	76-90	91-120	121-180	181-240	241-360	361-480	481+
3/8	17	10	4	8	2	4	1					
9/16	19	8	10	6	7	2	4	1				
1/4	19	8	10	6	7	2	4	1				
3/16	8	5	5	2	3	2						
1/8	6	5	5	2	3	2						
5/16	2	1	2	2	1	1						
0	1	1	1	1	1	1						

TOTAL TIME AT OR BELOW EACH VISIBILITY CLASSED AS ONE INCIDENT

TABLE VII. (CEILING ZERO)

VISIBILITY	DURATION IN MINUTES										
	1-15	16-30	31-45	46-60	61-75	76-90	91-120	121-180	181-240	241-360	361-480
3/8	21	7	6	1	11	9	6	3	2	2	1
9/16	21	7	6	1	10	9	6	3	2	2	1
1/4	21	7	6	1	10	9	6	3	2	2	1
3/16	13	4	2	2	4	6	2	2	1	2	1
1/8	13	4	5	2	4	6	2	2	1	2	1
5/16	9	2	3	2	4	6	2	2	1	2	1
0	4	2	3	2	4	6	2	2	1	2	1

TOTAL TIME AT OR BELOW EACH VISIBILITY CLASSED AS ONE INCIDENT

TABLE VIII. (CEILING 100 FEET OR ZERO)

VISIBILITY	DURATION IN MINUTES										
	1-15	16-30	31-45	46-60	61-75	76-90	91-120	121-180	181-240	241-360	361-480
3/8	22	6	10	8	14	12	10	3	4	2	1
9/16	21	8	10	6	15	11	10	3	4	2	1
1/4	21	8	10	6	15	11	10	3	4	2	1
3/16	10	2	10	6	7	7	9	2	2	2	1
1/8	10	2	10	6	7	7	9	2	2	2	1
5/16	6	1	6	4	3	6	4	2	2	2	1
0	5	2	2	3	2	6	4	2	2	2	1

TABLE X

BIRMINGHAM, INTERNATIONAL

ALL SEASONS

ALL HOURS

JANUARY 1956 - DECEMBER 1963

FREQUENCY OF OCCURRENCE

CATEGORY	TIME IN MINUTES												PERCENTAGE				
	1-15	16-30	31-45	46-60	61-80	81-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL	1-90	91-ALL	1-ALL
II	86	54	35	20	18	10	2	3	1			211	16	227			
IIIA	31	20	19	3	9	3	7	1				82	15	97			
IIIB/C	9	4	3	1	8	7	5	6				29	19	48			
II + III	52	32	29	16	21	20	19	8	12	4	1	150	65	215			
III	24	14	14	6	14	10	7	3	11	1	2	72	34	106			

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

CATEGORY	TIME IN MINUTES												PERCENTAGE				
	1-15	16-30	31-45	46-60	61-80	81-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL	1-90	91-ALL	1-ALL
II	14.8	21.7	23.4	18.0	23.2	17.4	4.3	9.3	6.3			101.0	35.4	136.4	.12	.04	.16
IIIA	5.9	7.9	12.7	2.7	11.7	5.6	17.0	3.2	20.0			40.9	45.7	88.6	.05	.05	.10
IIIB/C	1.7	3.2	1.7	1.0	10.2	11.9	11.6		27.7			12.7	17.9	81.8	.02	.07	.09
II + III	9.0	13.1	19.6	14.0	26.4	34.7	47.1	27.5	61.6	29.2	22.7	82.0	222.8	304.8	.09	.25	.35
III	4.8	5.5	9.5	5.4	17.7	17.4	16.4	10.1	93.5	6.8	21.3	42.9	125.5	168.4	.03	.14	.19

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

CATEGORY	TIME IN MINUTES												PERCENTAGE				
	1-15	16-30	31-45	46-60	61-80	81-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL	1-90	91-ALL	1-ALL
II	10.5	24.1	40.1	34.0	77.3	104.2	129.5	189.3	256.0			28.7	132.8	36.1			
IIIA	11.3	23.8	40.2	33.7	78.2	111.0	145.4	189.0	300.3			29.9	182.7	53.6			
IIIB/C	11.4	24.1	34.7	60.0	76.6	102.0	139.6		276.7			764.0	37.0	201.9	102.3		
II + III	10.3	24.6	40.5	52.4	73.4	104.2	146.6	206.5	308.0	437.3	681.5	32.8	205.7	85.1			
III	12.1	23.4	40.8	33.9	76.0	104.6	140.1	202.0	291.9	406.0	640.0	35.8	221.5	95.3			

TOTAL OBSERVATION HOURS 87672

BIRMINGHAM, INTERNATIONAL

NO WIND TABLES FOR THIS STATION

TABLE XIII - TEMPERATURE < 33 DEGREES (F), BIRMINGHAM, INTERNATIONAL									
0700 - 1300 (29871 OBSERVATION HOURS)									
JANUARY 1956 - DECEMBER 1965									
CATEGORY 1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480									
TIME IN MINUTES									
II	1		1						
IIIA	1		1						
IIIB							2	2	
IIIC							2	2	
II + III	1		1						
III							2	2	
TOTAL TIME IN EACH DURATION HOURS AND TENTHS									
CATEGORY 1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480									
TIME IN MINUTES									
II	.3		1.1						
IIIA	.3		1.1						
IIIB							1.3	1.3	
IIIC							1.3	1.3	
II + III	.3		1.1						
III							1.3	1.3	
AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS									
CATEGORY 1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480									
TIME IN MINUTES									
II	15.0		63.0						
IIIA	15.0		63.0						
IIIB							39.0	39.0	
IIIC							39.0	39.0	
II + III	15.0		63.0						
III							39.0	39.0	
FREQUENCY OF OCCURRENCE									
1400 - 2100 (29824 OBSERVATION HOURS)									
CATEGORY 1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480									
TIME IN MINUTES									
II	3								
IIIA	3	2							
IIIB							3	3	
IIIC							3	3	
II + III	1								
III	2	2					1	1	2
TOTAL TIME IN EACH DURATION HOURS AND TENTHS									
CATEGORY 1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480									
TIME IN MINUTES									
II	1.1								
IIIA	1.1	1.4							
IIIB							2.4	2.4	
IIIC							2.4	2.4	
II + III	.3								
III	.7	1.4					2.1	2.1	
AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS									
CATEGORY 1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480									
TIME IN MINUTES									
II	21.0								
IIIA	21.0	41.0							
IIIB							29.2	29.2	
IIIC							29.2	29.2	
II + III	16.0								
III	21.0	41.0					31.3	31.3	
FREQUENCY OF OCCURRENCE									
2200 - 0600 (92877 OBSERVATION HOURS)									
CATEGORY 1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480									
TIME IN MINUTES									
II	1		1						
IIIA	1	1	1						
IIIB							3	3	
IIIC							3	3	
II + III	1		1	1					
III	1		1	1			2	1	3
TOTAL TIME IN EACH DURATION HOURS AND TENTHS									
CATEGORY 1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480									
TIME IN MINUTES									
II	.4		1.9						
IIIA	.3	1.4	1.9						
IIIB							2.1	2.1	
IIIC							2.1	2.1	
II + III	.3		1.8	3.0					
III	.3	1.5	3.0	3.0			1.7	3.0	4.7
AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS									
CATEGORY 1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480									
TIME IN MINUTES									
II	22.0								
IIIA	15.0	22.0	88.0						
IIIB							41.7	41.7	
IIIC							180.0	180.0	
II + III	15.0		110.0	180.0					
III	15.0		88.0	180.0			15.0	145.0	101.7
ALL (87672 OBSERVATION HOURS)									
CATEGORY 1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480									
TIME IN MINUTES									
II	2		1						
IIIA	2	3	2	2					
IIIB							9	9	
IIIC							9	9	
II + III	2	1	1	1	1				
III	1	2	2	1	1		6	1	7
TOTAL TIME IN EACH DURATION HOURS AND TENTHS									
CATEGORY 1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480									
TIME IN MINUTES									
II	.2	1.4	1.1						
IIIA	.5	1.1	1.4	2.5					
IIIB							5.2	5.2	
IIIC							5.2	5.2	
II + III	.5		1.1	3.0					
III	.5	.7	1.4	1.5	3.0		1.8	3.0	3.0
AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS									
CATEGORY 1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480									
TIME IN MINUTES									
II	15.0	21.3	41.0	75.3					
IIIA							27.2	27.2	
IIIB							34.3	34.3	
IIIC							180.0	180.0	
II + III	15.0	16.0	63.0	110.0	176.0				
III	15.0	21.3	41.0	86.0	180.0		27.3	154.0	81.6
							38.0	180.0	58.3

BIRMINGHAM, INTERNATIONAL
TABLE SIX - TEMPERATURE < 33 DEGREES (PPI) WITH FOG, NO PRECIPITATION, AND WIND < 9 KNOTS.
0700 - 1700 (23971 OBSERVATION HOURS) JANUARY 1958 - DECEMBER 1965

FREQUENCY OF OCCURRENCE

CATEGORY	TIME IN MINUTES										481+	1-90	91-ALL	1-ALL
	1-15	16-30	31-45	46-60	61-80	81-120	121-180	181-240	241-360	361-480		1-90	91-ALL	1-ALL
III											1	1	1	1
III _A											1	1	1	1
III _B														
III _C														
III + III _I											1	1	1	1
III _I														

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

CATEGORY	TIME IN MINUTES										481+	1-90	91-ALL	1-ALL
	1-15	16-30	31-45	46-60	61-80	81-120	121-180	181-240	241-360	361-480		1-90	91-ALL	1-ALL
III											1.1	1.1	1.1	1.1
III _A											1.1	1.1	1.1	1.1
III _B												1.1	1.1	1.1
III _C														
III + III _I											1.1	1.1	1.1	1.1
III _I														

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

CATEGORY	TIME IN MINUTES										481+	1-90	91-ALL	1-ALL
	1-15	16-30	31-45	46-60	61-80	81-120	121-180	181-240	241-360	361-480		63.0	63.0	63.0
III											63.0	63.0	63.0	63.0
III _A											63.0	63.0	63.0	63.0
III _B														
III _C														
III + III _I											63.0	63.0	63.0	63.0
III _I														

1400 - 2100 (29224 OBSERVATION HOURS)

NO OCCURRENCE OF DATA

2200 - 0600 (32677 OBSERVATION HOURS)

CATEGORY	TIME IN MINUTES										481+	1-90	91-ALL	1-ALL
	1-15	16-30	31-45	46-60	61-80	81-120	121-180	181-240	241-360	361-480		1-90	91-ALL	1-ALL
III											1	1	1	1
III _A											1	1	1	1
III _B														
III _C														
III + III _I											1	1	1	1
III _I											1	1	1	1

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

CATEGORY	TIME IN MINUTES										481+	1-90	91-ALL	1-ALL
	1-15	16-30	31-45	46-60	61-80	81-120	121-180	181-240	241-360	361-480		1-90	91-ALL	1-ALL
III											1.0	1.0	1.0	1.0
III _A											1.0	1.0	1.0	1.0
III _B														
III _C														
III + III _I											1.0	1.0	1.0	1.0
III _I														

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

CATEGORY	TIME IN MINUTES										481+	1-90	91-ALL	1-ALL
	1-15	16-30	31-45	46-60	61-80	81-120	121-180	181-240	241-360	361-480		22.0	22.0	22.0
III											22.0	22.0	22.0	22.0
III _A											22.0	22.0	22.0	22.0
III _B														
III _C														
III + III _I											22.0	22.0	22.0	22.0
III _I														

187672 OBSERVATION HOURS)

CATEGORY	TIME IN MINUTES										481+	1-90	91-ALL	1-ALL
	1-15	16-30	31-45	46-60	61-80	81-120	121-180	181-240	241-360	361-480		1-90	91-ALL	1-ALL
III											1	1	1	1
III _A											1	1	1	1
III _B														
III _C														
III + III _I											1	1	1	1
III _I														

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

CATEGORY	TIME IN MINUTES										481+	1-90	91-ALL	1-ALL
	1-15	16-30	31-45	46-60	61-80	81-120	121-180	181-240	241-360	361-480		22.0	22.0	22.0
III											22.0	22.0	22.0	22.0
III _A											22.0	22.0	22.0	22.0
III _B														
III _C														
III + III _I											22.0	22.0	22.0	22.0
III _I														

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

CATEGORY	TIME IN MINUTES										481+	1-90	91-ALL	1-ALL
	1-15	16-30	31-45	46-60	61-80	81-120	121-180	181-240	241-360	361-480		22.0	22.0	22.0
III											22.0	22.0	22.0	22.0
III _A											22.0	22.0	22.0	22.0
III _B														
III _C														
III + III _I											22.0	22.0	22.0	22.0
III _I														

TABLE XV - TEMPERATURE < 33 DEGREES (F), WITH FOG, NO PRECIPITATION, AND WIND 9-12 KNOTS.
BIRMINGHAM, INTERNATIONAL
JANUARY 1936 - DECEMBER 1969

NO OCCURRENCE OF DATA

BIRMINGHAM, INTERNATIONAL
TABLE XVI - TEMPERATURE < 29 DEGREES (P).

JANUARY 1956 - DECEMBER 1965

NO OCCURRENCE OF DATA

BIRMINGHAM, INTERNATIONAL
TABLE XVII - TEMPERATURE C 27 DEGREES (F 81) WITH 800, NO PRECIPITATION, AND WIND 0.8 KNOTS,
JANUARY 1968 - DECEMBER 1969

NO OCCURRENCE OF DATA

1

BERKINBROOK INTERNATIONAL
TABLE 14111 - TEMPERATURE C 20 DEGREES (68) WITH FOG, NO PRECIPITATION, AND WIND 8-12 KNOTS,
JANUARY 1950 - DECEMBER 1963

NO OCCURRENCE OF DATA

TABLE XX - TEMPERATURE - 5 DEGREES CELSIUS WITH 50% NO. PRECIPITATION, AND WIND < 9 KNOTS,
 (2700 - 1400 - 2551 OBSERVATION HOURS) JANUARY 1966 - DECEMBER 1965

TOTAL TIME IN EACH DURATION HOURS AND TENTHS

CATEGORY	TIME IN MINUTES										481+	1-90	91-ALL	1-ALL
	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480				
I	1.9	1.6	1.3	.8	1.1							0.6	0.6	
IIA	.7	2.1	1.2			1.1						5.2	5.2	
IIIB	.2	.7	.5									1.9	1.9	
IIIC	.4											.4	1.9	2.3
II + III	.7	.8	1.5		2.1		2.1					5.1	2.1	7.2
III	5.5	1.3	1.5				1.9					3.2	1.3	5.1

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS

CATEGORY	TIME IN MINUTES												481+	1 90	91-ALL	1-ALL
	1-15	16-30	31-45	46-60	61-70	71-120	121-160	181-240	241-360	361-480	481+	481+				
II	9.3	23.8	70.0		+8.0	65.0							19.8		19.8	
IIIA	10.5	25.4	74.0										24.2		24.2	
IIIB	14.0	19.5	77.0										22.5		22.5	
IIIC			25.0										25.0	114.0	69.5	
III + III	10.5	23.4	44.0			63.0	114.0		127.0				30.3	127.0	39.0	
III	14.0	25.3	44.0				114.0						27.4	114.0	38.6	

5000000-05-N11000000

AVERAGE TIMES IN EACH PREGNANCY MAMMAL AND BENTHIC

CATEGORY	TIME IN MINUTES										481+	1-90	91-ALL	1-ALL	
	15-16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480						
I	7.0	16.5	39.0				192.0			192.0	20.8	192.0			
II	6.0	24.3	39.0			180.0				24.6	180.0		40.0		
III										34.0			34.0		
IIIC								470.0			23.0	470.0		246.0	
III + III	6.0	23.0	39.0	67.0		192.0				540.0	32.8	360.0		116.0	
III		22.5		62.0						500.0	35.7	300.0		151.0	

2200 - 0400 (28267 OBSERVATION HOURS)

TIME IN MINUTES															
CATEGORY		1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-300	301-480	481+	1-90	91-ALL	1-ALL
III	34	35	13	13	9	8	2	1					104	12	11
IIIA	16	9	15	7	6	7	5	2	4				43	13	6
IIIB	6	5	2	2	1	4	3	1	3				18	11	2
IIIC	3	1	1	1	2	2	1	1	1				6	0	
III + III	14	20	16	13	11	16	13	9	13	2	1	77	48	12	

111 6 6 9 8 9

CATEGORY	TOTAL TIME IN EACH DURATION HOURS AND TENTHS										TIME IN MINUTES									
	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	+81+	1-90	91-ALL	1-ALL						
III	6.9	14.0	8.6	11.6	11.9	17.8	5.1	3.1	6.3		52.6	26.2	78.8							
IIIA	3.2	3.3	10.0	6.5	7.5	3.3	12.8	6.0	18.8		29.6	40.1	66.2							
IIIB	1.2	2.1	1.3	2.0	3.0	6.6	6.8	3.8	13.2		10.3	29.6	39.6							
IIIC		1.2		0.6	1.0	3.7	3.6	4.8	3.8	4.5		6.4	17.6	24.2						
II + III	3.1	8.1	10.6	11.4	18.1	27.4	33.2	6.7	65.1	14.4	8.6	51.3	158.8	210.0						

1.3 2.3 8.1 7.1 11.2 11.7

CATEGORY	AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS										TIME IN MINUTES	481+	1-90	91-4LL	1-AL
	1-15	16-30	31-45	46-60	61-75	76-90	91-120	121-180	181-240	241-360					
II	12.1	23.9	39.6	52.4	79.0	103.1	153.5	240.0	256.0	30.3	130.9	40.6			
IIIA	11.9	21.7	38.8	55.7	75.0	94.7	153.6	197.0	281.5	33.5	185.2	60.0			
IIIB	11.7	24.6	39.5	50.0	76.1	94.9	136.3	230.0	263.7	34.3	161.5	60.0			
IIIC	24.0	39.0	60.0	73.6	104.7	144.3	224.9	269.5	48.6	175.6	106.0				
II + III	13.3	24.2	38.0	52.6	77.1	102.7	153.2	194.5	281.5	43.1	186.0	40.0	198.3	106.0	
III	11.7	21.7	38.8	55.7	75.0	94.7	153.6	197.0	281.5	34.3	161.5	60.0			

1416 23.3

ALL										(187672 OBSERVATION HOURS)																			
FREQUENCY OF OCCURRENCE										TIME IN MINUTES																			
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL															
II	40	41	17	14	10	8	2	2	2	1	1	130	13	14															
IIIA	20	16	17	7	6	2	5	2	4	1	66	13	13	13															
IIIB	7	8	4	2	3	5	9	1	9	1	26	12	12	12															
IIIC	4	1	1	3	2	2	2	1	1	1	9	7	7	7															
IIII	18	20	22	17	11	15	12	14	13	2	1	23	51	51															

III 8 11 11 8 10

TOTAL TIME IN EACH DURATION HOURS AND TENTHS										TIME IN MINUTES																							
CATEGORY	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-41	86	16.1	11.2	12.2	12.9	13.9	13.1	6.1	4.3	6.1	29.4	90	72	35.0	40.4	31.1	22.8	30.0	
I	3.0	2.2	1.1	1.6	6.5	5.5	3.3	1.9	6.6	6.6	10.8	9.0	9.0	9.0	35.0	40.4	31.1	22.8	30.0														
IIA	1.4	3.1	2.5	4.0	3.0	3.5	6.8	6.8	13.2	13.2	12.9	12.9	12.9	12.9	34.1	34.1	34.1	34.1	34.1														
IIIB	1.6	1.6	1.0	3.7	3.7	3.7	4.8	3.8	4.5	7.8	7.8	6.8	6.8	6.8	22.8	22.8	22.8	22.8	22.8														
IIIC	3.9	9.0	13.7	11.5	21.4	27.4	35.3	12.9	65.2	14.4	17.6	59.0	173.1	232.0	1-41	86	16.1	11.2	12.2	12.9	13.9	13.1	6.1	4.3	6.1	29.4	90	72	35.0	40.4	31.1	22.8	30.0
III + III	3.9	9.0	13.7	11.5	21.4	27.4	35.3	12.9	65.2	14.4	17.6	59.0	173.1	232.0	1-41	86	16.1	11.2	12.2	12.9	13.9	13.1	6.1	4.3	6.1	29.4	90	72	35.0	40.4	31.1	22.8	30.0

III 2.0 4.4 7.6 7.3 12.2 13.9

CATEGORY	AVERAGE TIME IN EACH DURATION, MINUTES AND TENTHS										TIME IN MINUTES			
	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
III	11.2	23.6	39.3	52.1	77.6	103.1	151.5	187.5	250.0	281.9	300.0	28.3	135.6	38.0
IIIA	11.7	23.3	40.3	55.7	76.8	98.0	154.6	197.0	281.9	318.8	366.4	31.8	166.4	94.0
IIIB	12.0	23.8	47.1	60.0	76.7	101.4	156.3	230.0	261.9	300.0	322.3	170.7	207.7	116.0
IIIC	26.0	31.0	49.0	51.6	109.8	146.3	229.5	269.5	470.0	44.9	195.0	44.9	195.0	116.0
II + III	12.3	26.0	40.2	52.6	75.4	107.2	151.4	193.8	207.5	312.0	328.0	38.5	203.7	116.0

TIME IN MINUTES											JANUARY 1966 - DECEMBER 1966					
FREQUENCY OF OCCURRENCE			TIME IN MINUTES								JANUARY 1966 - DECEMBER 1966					
CATEGORY	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
III	23	7	7	2	3	3	1	1	1	1	1	1	481+	39	1	40
IIIA	3	5	2	1	1	2	1	1	1	1	1	1	1	7	2	19
IIIB	3	5	1	1	1	1	1	1	1	1	1	1	1	7	7	7
IIIC	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2
III + III	15	7	2	2	5	2	2	1	1	1	1	1	1	25	3	28
III	7	2	1	1	1	1	1	1	1	1	1	1	1	12	2	16

CATEGORY	TIME IN EACH DURATION HOURS AND TENTHS												TIME IN MINUTES			
	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL		
I	3.9	3.0	2.7	1.8	3.0	1.8						15.0	1.8	16.8		
IIIA	1.2	2.2	1.6	1.0	2.4	1.8	2.1					7.1	3.9	10.1		
IIIB	1.6	1.2	0.5									2.5		2.9		
IIIC	1.7	1.6	1.0									2.5	1.9	2.0		
III + III	4.7	1.0	1.3		3.8	3.0	2.1					11.5	5.9	17.5		
III	1.5	0.9	0.7	1.0	1.3	1.0	2.1					5.3	4.0	9.4		

CATEGORY	TIME IN MINUTES										4814	1-90	91-ALL	1-ALL
	1-15	16-30	31-45	46-60	61-70	71-75	76-80	81-120	121-180	181-240				
I	10.0	25.0	40.0	39.0	71.0	71.0	109.0				23.0	109.0	25.2	
IIIA	10.6	26.2	41.0	37.0	71.0	71.0	109.0				25.1	118.0	31.9	
IIIB	12.1	28.0	37.0								21.3		24.9	
IIIC	10.0	25.0					114.0				19.0	114.0	39.8	
III + III	11.5	24.0	45.0		69.2	114.0		127.0			27.9	118.7	37.5	
III	13.0	25.5	43.0	60.0	75.0	114.0		127.0			26.7	120.5	40.1	

1400 - 2100 (29224 OBSERVATION HOURS)																	
CATEGORY	TIME IN MINUTES																
	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL			
11	21	5	5	1											32	1	33
111A	6	5	3	1											15	1	16
111B			1												2		2
111C	1	1										1			2	1	3
111 + 1111	23	5	4	2	2										36	2	38
1111	?	3	2	1											13	1	14

CATEGORY	TIME IN MINUTES												481+	1-90	91-ALL	1-ALL
	1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	481+				
I	8.6	22.6	36.2	40.0						192.0				16.7	192.0	22.0
IIA	10.0	23.2	46.3	60.0					180.0					22.1	180.0	24.7
IIIB	7.0		34.0											23.0		80.5
IIIC	6.5	24.0									470.0			12.0	470.0	126.5
II + III	8.7	25.2	36.0	55.0	77.0				192.0				560.0	20.4	366.0	20.6
III	9.0	23.3	42.5										500.0	21.5	300.0	33.7

2200 - 0400 (32877 OBSERVATION HOURS)

TIME IN MINUTES																
CATEGORY			1-15	16-30	31-45	46-60	61-90	91-120	121-180	181-240	241-360	361-480	481+	1-90	91-ALL	1-ALL
II	39	38	20	17	14	9	2	2	2	1				134	14	148
IIIA	21	11	15	4	8	4	7	2	4					59	17	76
IIIB	6	5	6	2	5	4	3	1	9					19	11	30
IIIC	2	1	1	3	2	2	1	1	1					7	6	13
II + III	14	22	23	14	13	17	18	7	12	4	1	1	86	59	143	
III	16	7	9	5	11	10	6	3	11	1	1	1	42	32	74	

CATEGORY	AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS										TIME IN MINUTES				481+	140	91-ALL	1-ALL
	1-10	15-30	31-50	51-70	71-90	91-120	121-150	151-180	181-240	241-360	361-480	481+	140	91-ALL				
I	1.1	2.3	6.0	5.3	7.6	10.7	12.9	18.0	18.0	24.1	36.0	481+	140	91-ALL	33.3	130.3	42.5	
II	1.2	2.7	14.6	13.8	16.0	10.4	15.9	18.0	19.5	25.0	30.3	31.8	176.5	61.0				
IIIA	1.2	22.7	14.6	13.8	16.0	10.4	15.9	18.0	19.5	25.0	30.3	31.8	176.5	61.0				
IIIB	1.1	2.4	3.9	4.6	7.0	7.5	9.8	13.6	23.0	76.7	36.4	161.5	82.7					
IIIC	22.5	33.0	60.0	67.3	10.8	10.3	14.3	22.4	26.0	29.4	37.7	23.4	175.6	109.0				
III + III	11.5	25.9	41.1	52.1	7.5	10.2	14.7	20.8	30.4	43.7	51.6	39.4	200.2	104.9				
III	13.6	23.4	40.1	52.2	74.9	104.6	142.3	202.0	291.9	406.0	486.0	41.6	208.5	112.9				

FREQUENCY OF OCCURRENCE		ACT		(17,762 OBSERVATION HOURS)													
CATEGORY	1-15	TIME IN MINUTES												481+	1-90	91-ALL	1-ALL
		16-30	31-45	46-70	81-90	91-100	121-180	181-240	241-360	361-480	481+	1-90	91-ALL				
I	83	50	35	20	17	10	2	3	1					205	16	221	
II	13	20	19	5	4	4	4	2	6					87	18	103	
IIIA	10	9	2	2	5	3	1	1	1					29	12	41	
IIIB	6	3	1	1	2	2	1	1	1					10	7	17	
IIIC	51	31	24	16	20	19	19	8	12	4	2	167	64	211			
III	26	12	12	6	13	11	7	3	11	1	2	67	35	102			

CATEGORY	AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS										TIME IN MINUTES									
	1-15	15-30	30-45	45-60	60-75	75-90	90-120	120-180	180-240	240-360	360-480	480+	1-90	91-ALL	1-ALL					
III	13.5	24.3	40.1	54.0	78.2	104.2	129.5	189.3	256.0				28.8	132.8	36.3					
IIIA	11.6	24.1	40.1	54.0	77.4	104.8	145.5	195.0	300.3				29.3	174.1	52.7					
IIIB	11.6	23.7	37.5	50.0	77.5	101.4	136.3	230.0	263.7				31.5	170.7	73.0					
IIIC	8.3	23.0	33.0	50.0	76.3	109.8	144.3	229.5	269.5	470.0			40.1	195.0	102.4					
III + III	10.1	24.8	40.5	54.1	79.3	103.9	146.3	206.5	308.0	437.3	528.0	528.0	32.7	201.7	84.0					
III+	12.1	23.8	41.8	53.5	76.9	105.4	140.1	202.0	291.9	406.0	491.0	491.0	35.0	210.0	95.1					

TABLE 4-3 - TEMPERATURES IN 10 DEGREES CELSIUS WITH FOG, NO PRECIPITATION, AND WIND 9-12 KNOTS.
BIRMINGHAM, INTERNATIONAL
1400 - 2100 (23571 OBSERVATION HOURS) JANUARY 1956 - DECEMBER 1965

FREQUENCY OF OCCURRENCE		TIME IN MINUTES				TIME IN MINUTES				TIME IN MINUTES			
CATEGORY	1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480	481+	1-90	91-ALL	1-ALL	CATEGORY	1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480	481+	1-90	91-ALL	1-ALL		
II	1	3				III	4			III	4		
IIIA	1	2				IIIB	3			IIIC	3		
IIIB	1					IIIC	2			IIIC	2		
IIIC						II + III				II + III	6		
II + III	2	4				II + III	2			II + III	6		
III	1	1				III	2			III	2		

TOTAL TIME IN EACH DURATION HOURS AND TENTHS		TIME IN MINUTES											
CATEGORY	1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480	481+	1-90	91-ALL	1-ALL								
II	.3	1.3				II	.6			II	.6		
IIIA	.3	.8				IIIA	1.1			IIIA	1.1		
IIIB	.2					IIIB	.2			IIIB	.2		
IIIC	.5	1.7				IIIC	2.1			IIIC	2.1		
II + III	.2	.3				II + III	.6			II + III	.6		
III						III				III			

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS		TIME IN MINUTES											
CATEGORY	1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480	481+	1-90	91-ALL	1-ALL								
II	15.0	26.3				II	23.5			II	23.5		
IIIA	15.0	23.0				IIIA	22.7			IIIA	22.7		
IIIB	14.0					IIIB	14.0			IIIB	14.0		
IIIC	14.5	24.8				IIIC	21.3			IIIC	21.3		
II + III	14.0	20.0				II + III	17.0			II + III	17.0		
III						III				III			

TOTAL TIME IN EACH DURATION HOURS AND TENTHS		TIME IN MINUTES											
CATEGORY	1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480	481+	1-90	91-ALL	1-ALL								
II	.3					II	.3			II	.3		
IIIA	.2					IIIA	.2			IIIA	.2		
IIIB						IIIB				IIIB			
IIIC						IIIC				IIIC			
II + III						II + III				II + III			
III						III				III			

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS		TIME IN MINUTES											
CATEGORY	1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480	481+	1-90	91-ALL	1-ALL								
II	10.0					II	10.0			II	10.0		
IIIA	10.0					IIIA	10.0			IIIA	10.0		
IIIB						IIIB				IIIB			
IIIC						IIIC				IIIC			
II + III	10.0					II + III	10.0			II + III	10.0		
III						III				III			

TOTAL TIME IN EACH DURATION HOURS AND TENTHS		TIME IN MINUTES											
CATEGORY	1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480	481+	1-90	91-ALL	1-ALL								
II	2	2	3			II	7			II	7		
IIIA	3	2	1			IIIA	6			IIIA	6		
IIIB						IIIB				IIIB			
IIIC						IIIC	1			IIIC	1		
II + III	2	1	1			II + III	10			II + III	10		
III	2	1	1			III	4			III	4		

TOTAL TIME IN EACH DURATION HOURS AND TENTHS		TIME IN MINUTES											
CATEGORY	1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480	481+	1-90	91-ALL	1-ALL								
II	.6	2.2				II	3.4			II	3.4		
IIIA	.7	.8	.7			IIIA	2.4			IIIA	2.4		
IIIB						IIIB				IIIB			
IIIC						IIIC	1.0			IIIC	1.0		
II + III	.9	.5	2.9	1.0		II + III	5.3			II + III	5.3		
III	.5	1.0	1.0	1.0		III	1.9			III	1.9		

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS		TIME IN MINUTES											
CATEGORY	1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480	481+	1-90	91-ALL	1-ALL								
II	12.0	24.5	43.3			II	29.0			II	29.0		
IIIA	14.0	24.5	43.0			IIIA	23.5			IIIA	23.5		
IIIB						IIIB				IIIB			
IIIC						IIIC	60.0			IIIC	60.0		
II + III	13.5	28.0	43.8	60.0		II + III	31.7			II + III	31.7		
III	15.0	24.0	43.0	60.0		III	28.5			III	28.5		

TOTAL TIME IN EACH DURATION HOURS AND TENTHS		TIME IN MINUTES											
CATEGORY	1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480	481+	1-90	91-ALL	1-ALL								
II	1.0	2.1	2.7			II	5.3			II	5.3		
IIIA	.7	1.2	1.1			IIIA	2.4			IIIA	2.4		
IIIB						IIIB	.2			IIIB	.2		
IIIC						IIIC	1.0			IIIC	1.0		
II + III	1.7	2.1	2.9	1.0		II + III	7.8			II + III	7.8		
III	.7	1.7	1.0	1.0		III	2.5			III	2.5		

AVERAGE TIME IN EACH DURATION MINUTES AND TENTHS		TIME IN MINUTES											
CATEGORY	1-15 16-30 31-45 46-60 61-90 91-120 121-180 181-240 241-360 361-480	481+	1-90	91-ALL	1-ALL								
II	11.0	25.0	43.3			II	24.6			II	24.6		
IIIA	14.0	23.3	43.0			IIIA	20.9			IIIA	20.9		
IIIB													